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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/961,378

Applicant(s)

STEPANOV ET AL.

Examiner

Michelle R. Connelly-Cushwa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7 and 11-20 is/are rejected.
- 7) ☒ Claim(s) 3,6 and 8-10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1 ☐ Certified copies of the priority documents have been received.
- 2 ☐ Certified copies of the priority documents have been received in Application No. ____.
- 3 ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

DETAILED ACTION

Drawings

Three (3) sheets of formal drawings were filed on September 25, 2001 and have been accepted by the Examiner.

Specification

The disclosure is objected to because of the following informalities: on page 5, line 21, "reflection" should be --transmission--.

Appropriate correction is required.

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5, 7 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laming et al. (US 6,466,311 B1).

Regarding claims 1, 4, 11, 12 and 14-20; Laming et al. discloses all of the limitations of these claims, except for specifically stating that a theoretical test grating structure for desired spectral characteristics is numerically designed.

In column 1, lines 45-51, Laming et al. discloses that a grating section (test grating structure) is fabricated (written) in a portion of an optical waveguide; that

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deviations from an expected response of the written grating section are measured; that a grating parameter is varied (reconstructed) for writing a next compensated grating section depending on the measured deviations from the previously written grating section (test grating); wherein the compensated grating section is based on a different theoretical grating structure than the theoretical test grating structure; wherein the waveguide is a fiber or planar waveguide; and wherein the steps of writing test gratings, measuring the spectral characteristics, varying the grating parameters, and writing a further compensated grating are repeated.

In order for an expected response to exist, a theoretical grating structure for desired spectral characteristics would have to be numerically designed, otherwise there could not be an expected response before the first test grating is written. Therefore, one of ordinary skill in the art would have found it obvious to numerically design a theoretical test grating structure for desired spectral characteristics to obtain the expected response before the first grating structure is written, when using the method disclosed by Laming et al.

Regarding claims 2, 5 and 7; Laming et al. teaches all of the limitations of claims 2, 5 and 7 as applied above, except for specifically stating that an inverse scattering problem based on the measured actual spectral characteristics is solved; that the comparison of the actual with the initial numerical design comprises subtracting deviations of the actual from the numerical design from the numerical design to form the compensated design; and that the comparison of the actual with the initial numerical design comprises multiplying the theoretical test grating function with a ratio of the

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theoretical test grating function and the actual test grating function. Standard mathematical methods for analyzing theoretical values with respect to experimental values to determine a corrected or compensated value include inverse problem solving based on the measured/experimental values in relation to the theoretical values, subtracting measured deviations/differences between measured/experimental and theoretical values from theoretical values, and multiplying theoretical values/functions with a ratio of the theoretical values/functions to the measured/experimental values/functions.

One of ordinary skill in the art would have been familiar with standard methods of mathematical analysis for comparing theoretical values/functions to experimental/measured values/functions. Therefore, one of ordinary skill in the art would have found it obvious to solve an inverse scattering problem based on the measured actual spectral characteristics; subtract deviations of the actual from the numerical design from the numerical design; and multiply the theoretical test grating function with a ratio of the theoretical test grating function to the actual test grating function to determine a corrected/compensated value and write a compensated grating structure.

Regarding claim 13; Laming et al. teaches all of the limitations of claim 13, as applied above, except for the step of writing the grating comprising utilizing an interferometer. The practice of writing gratings utilizing interferometers is well established and commonly practiced in the art. Thus, one of ordinary skill in the art

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would have found it obvious to use an interferometer to write a grating in the invention of Laming et al., since this is very elementary in the art.

Allowable Subject Matter

Claims 3, 6 and 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited on attached form PTO-892 is the most relevant prior art known, however, the invention of claims 3, 6, and 8-10 distinguishes over the prior art of record for the following reasons.

Regarding claim 3; the claim is allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious a method as defined in claim 3, wherein the solving of the inverse scattering problem comprises utilizing a layer-peeling algorithm.

Regarding claim 6; the claim is allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious a method as defined in claim 6, wherein the deviations are filtered from high frequency components.

Regarding claims 8-10; the claims are allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious a method as defined in claim 8, wherein the step of measuring the actual

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spectral characteristics comprises measuring the actual spectral characteristics of the test grating from both ends thereof. Claims 9 and 10 depend from claim 8.

Hence, there is no reason or motivation for one of ordinary skill in the art to sue the prior art of record to make the invention of claims 3, 6 and 8-10.

Conclusion

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Linke et al. (US 6,363,097 B1) discloses a semiconductor laser with a rewritable wavelength grating stabilizer; Kewitsch et al. (US 6,169,830 B1) discloses methods of fabricating grating assisted coupler devices; Wood et al. (US 6,172,811 B1) discloses an optical grating and a method of fabricating an optical grating; and Mieher et al. (US 2003/0048458 A1) discloses a method for determining lithographic focus and exposure for writing optical gratings.

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (703) 305-5327. Any

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inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956 or to the technical support staff supervisor at telephone number (703) 308-3072.

Michelle R. Connelly-Cushwa

MRCC

April 16, 2003


AKMAL ENAYET ULLAH
PRIMARY EXAMINER